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09/879,633	06/12/2001	Braja K. Mandal	3012 P 002	4273

7590

10/14/2003

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EXAMINER

CHANEY, CAROL DIANE

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 10/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/879,633

Applicant(s)

MANDAL ET AL.

Examiner

Carol Chaney

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 5,7-19,22 and 24-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,21,23,39 and 40 is/are rejected.
- 7) ☒ Claim(s) 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

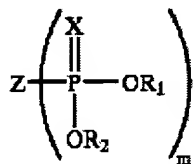
Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3,5. 6) ☐ Other: _____

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Election/Restrictions

Applicant's election with traverse of the invention of Group I, claims 1-25, 39, and 40,
and within Group I, the election of the species of the compounds



where 'X' is oxygen

R_1 is C.sub.1 to C.sub.12 alkyl moiety that is terminally substituted with zero to three halogen atoms

R_2 is a C.sub.1 to C.sub.12 alkyl moiety that is terminally substituted with zero to three halogen atoms

'Z' is an oxy derivative of aryl groups,

in Paper No. 8 is acknowledged.

Applicant has identified claims 1-4, 6, 20, 21, 23, 39, and 40 as reading on the elected species. The traversal is on the ground(s) claim 4 is not generic because a generic claim cannot be the same claim that defines a single disclosed species. This is not found persuasive because generic claim 4 defines a plurality of species. As noted in the restriction requirement mailed 18 June 2003, claim 4 includes 432 species, and claim 4 is not currently allowable.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102/103

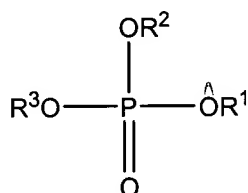
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

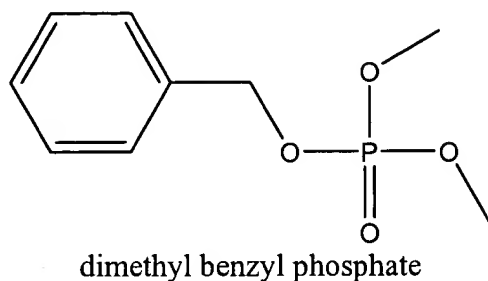
Claims 1-4, and 40 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Gan et al., US Patent 6,068,950.

Gan et al. disclose adding phosphate ester compounds to the electrolytes of lithium nonaqueous batteries. The phosphate additive is preferably an alkyl phosphate compound having the general formula



where R¹, R² and R³ are the same or different, and can be hydrogen atoms or saturated or unsaturated organic groups containing 1 to 13 carbon atoms. As specific examples, dimethyl benzyl phosphate and diphenyl phosphate are disclosed. (See column 6, lines 44-65.)

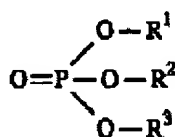
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The phosphate additives disclosed by Gan et al. encompass the species disclosed by the applicants, and are used in similar applications. Since the materials disclosed by Gan et al. and the applicants are similar, the material electrical and thermal properties will inherently also be similar. In the alternative, the electrical conductivity and thermal self-heating rates of the batteries disclosed by Gan et al. would have been obvious to one of ordinary skill in the art.

Claims 1-4, 6, 23, and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Olsen et al., US Patent 5,455,127.

Olsen et al. disclose flame retardants incorporated into lithium batteries. The flame retardants disclosed by Olsen et al. are phosphate compounds of the form



where R^1 , R^2 , and R^3 are each an organic aliphatic compound, such as CH_3 , C_2H_5 , C_3H_7 , C_4H_9 , C_5H_{11} , or an aromatic compound, such as C_6H_5 , and the like.

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The phosphate additives disclosed by Olsen et al. encompass the species disclosed by the applicants, and are used in similar applications. Since the electrolyte compositions disclosed by Olsen et al. and the applicants are similar, the material electrical and thermal properties of the electrolytes will inherently also be similar. Note that the electrolyte disclosed by Olsen et al. contains electrolyte salt and flame retardant dissolved in a liquid solvent, which is contained in a polymer matrix. See column 4, lines 11-13, where the electrolyte is described as "solvent-containing". In the alternative, the electrical conductivity and thermal self-heating rates of the batteries disclosed by Olsen et al. would have been obvious to one of ordinary skill in the art.

Claim Rejections - 35 USC §103

Claim 39 is rejected under 35 U.S.C. 103(a) as being anticipated by either Gan et al. OR Olsen et al.

As discussed above, Olsen et al. or Gan et al. disclose applicants' invention essentially as claimed, with the exception that a module using two batteries is not explicitly disclosed by either prior art. A system with two batteries is considered to be a duplication of parts, and the duplication of parts (for a multiplied effect) has been shown to be obvious unless a synergistic effect can be shown. See *St. Regis Paper Co. v. Bemis Co., Inc.*, 193 USPQ 8, 11, (7th Cir.) 1977)

Claim 21 is rejected under 35 U.S.C. 103(a) as being anticipated by Olsen et al., US Patent 5,455,127 in view of Usami et al., US Patent 6,210,840.

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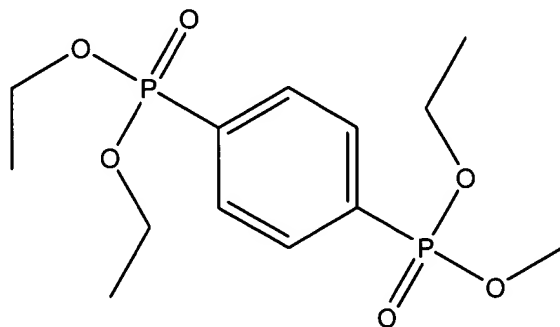
As discussed above, Olsen et al. disclose applicants' invention essentially as claimed, with the exception that Olsen et al. do not disclose R_1 or R_2 to be alkyl moieties that are substituted with one or more fluorine groups. Usami et al. teach similar phosphate ester compounds used as flame retardants battery electrolytes, and teach that halogenated alkyl groups improve battery capacity retention. (See Usami, column 3, lines 27-33.) Therefore it would have been obvious to one of ordinary skill in the art to use halogenated alkyl groups in the phosphate flame retardants taught by Olsen et al., because Usami et al. teach this will increase capacity retention in the battery.

Allowable Subject Matter

Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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With regards to claim 20, the prior art fails to suggest the compounds diethyl(2,6-di-tert-butyl-4-methylphenyl)phosphate, benzene-1,4-bis-diethylphosphate, or 1,4-bis(diethylphosphoro)benzene as flame retardants. Benzene-1,4-bis-diethylphosphate and 1,4-bis(diethylphosphoro)benzene appear to both refer to the compound



The compounds diethyl(2,6-di-tert-butyl-4-methylphenyl)phosphate and 1,4-bis(diethylphosphoro)benzene are the two compounds in the Markush group recited by applicants' claim 21 which read on the species of claim 4 which applicant elected.

While the prior art discloses alkyl and aryl phosphate esters as flame retardant compounds for battery electrolytes, the two specific compounds recited in claim 20 are not suggested by the prior art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (703) 305-3777. The examiner can normally be reached on Mon - Fri 8:00am-4:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 703-308-2383. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Carol Chaney
Primary Examiner
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